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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/539,041	06/15/2005	Friedrich Boecking	R.304047	5841

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EXAMINER	
DOUGHERTY, THOMAS M	
ART UNIT	**PAPER NUMBER**
2834	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/18/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/539,041	BOECKING ET AL.	
	Examiner	Art Unit	
	Thomas M. Dougherty	2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 June 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *8-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *8-11,13-15 and 17-19* is/are rejected.

7)☒ Claim(s) *12, 16 and 20* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 June 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *605*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 8-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Kondo (US 5,252,883). Kondo shows (fig. 10) a piezoelectric actuator, a multilayered structure of piezoelectric layers (1) with inner electrodes (2A, 2B) disposed between them, a contacting of the inner electrodes (2A, 2B) on alternating sides with outer electrodes (only 5 is shown), and chamfered corners or edges (as shown) on the piezoelectric actuator, wherein the inner electrodes (2A, 2B) having a contour in the region of the corners or edges (note that they are shaped like the device itself), on the sides of the piezoelectric actuator on which the inner electrodes (2A, 2B) with alternating polarities are routed to the respective outer electrodes (e.g. 5), that makes it possible to achieve a lower field intensity between the inner electrodes (2A, 2B) of alternating polarities in the structure of piezoelectric layers (1). Note that as the claimed structural features are met by Kondo, the achievement of a lower field intensity between the inner electrodes is inherent, unless another aspect actually is employed to achieve this.

The chamfers at the comers of the piezoelectric actuator are embodied so that the edge on the side that is not contacted by the outer electrodes (e.g. 5) has an obtuse angle.

In his figure 2, the chamfers at the comers of the piezoelectric actuator are embodied so that at least the edge on the side that is not contacted by the outer electrodes (e.g. 5) is rounded. Note at col. 2, lines 26-36 that Kondo states that the edges could be angled, linear, convex or arcuate in shape.

The chamfers at the comers of the piezoelectric actuator are embodied so that the entire comer of the piezoelectric actuator and correspondingly, the contour of the respectively non-contacted inner electrode (2A or 2B) is rounded. Again note at col. 2, lines 26-36 that the electrodes and the piezoelectric parts are the same shape.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 13-15 and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kondo (US 5,252,883) in view of Sato et al. (US 2002/0152857). Given the invention of Kondo as noted above, he doesn't show recessed electrodes or electrodes of different shapes.

Sato et al. shows (figs. 35 and 36A-C) a piezoelectric actuator (1), comprising a multilayered structure of piezoelectric layers with inner electrodes (2) disposed between them, and chamfered corners or edges (as shown) on the piezoelectric actuator (1), wherein the inner electrodes (2) having a contour in the region of the corners or edges on the sides of the piezoelectric actuator (1) on which the inner electrodes (2) with

alternating polarities, that makes it possible to achieve a lower field intensity between the inner electrodes (2) of alternating polarities in the structure of piezoelectric layers (1).

In their figure 19, Sato et al. show rounded edges for their piezoelectric actuator.

On the side [of] that the inner electrode (2) of the respective opposite polarity is contacted, the contour of the respectively non-contacted inner electrode (also 2) is embodied so that it is recessed a preset amount from the outer contour of the piezoelectric actuator (1). See the various embodiments in their figure 36(a)-(c).

Sato et al. do not show specific a contacting of the inner electrodes on alternating sides with outer electrodes.

It would have been obvious to one having ordinary skill in the art to employ outer electrodes such as is shown by Kondo in the device of Sato et al. at the time of the Sato et al. invention in order to allow the Sato et al. invention to receive outside signals, thereby making allowing it to work.

Allowable Subject Matter

Claims 12, 16 and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the prior art does not show nor does it fairly suggest a piezoelectric actuator which is stack-shaped with outer and inner electrodes and chamfered edges wherein the chamfers at the comers of the piezoelectric actuator are embodied so that the

entire corner of the piezoelectric actuator is beveled and the contour of the respectively non-contacted inner electrode is rounded.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Additional prior art cited reads on at least some aspects of the claimed invention.

Direct inquiry to Examiner Dougherty at (571) 272-2022.

tmd

December 11, 2006

TOM DOUGHERTY
PRIMARY EXAMINER